

Video Assisted Anal Fistula Treatment, a Paradigm Shift in the Treatment of Complex Anal Fistulas

Anshu Atreya¹, Ankit Raikhy², Srinivasa Rao Geddam³, Abhishekh Bhartia⁴, Vishnu Kumar Bhartia⁵

^{1, 2, 4, 5} Department of Minimal Access Surgery, Calcutta Medical Research Institute, Kolkata, West Bengal, India.

³Department of Surgery, Calcutta Medical Research Institute, Kolkata, West Bengal, India.

ABSTRACT

BACKGROUND

Fistula-in-ano or anal fistulas are documented since ancient times and their management has always been a challenge. Various modalities of treatment are available and newer ones are being added each day. The aim of this retrospective study is to analyse the outcome of the video assisted anal fistula treatment (VAAFT), one of the modalities of treatment for complex anal fistulas done at our centre.

METHODS

Records of patients who had been treated through VAAFT by single senior consultant surgeon of Minimal Access Surgery unit between April 2013 and March 2019, were collected and analysed.

RESULTS

Altogether, records of 48 (forty-eight) patients who had undergone VAAFT during the period were analysed. Data revealed that 38 male (79.17 %) and 10 female (20.83 %) patients with mean age of 49.96 ± 12.22 years were operated. Most commonly, trans sphincteric followed by inter sphincteric type of fistulae were encountered. In 3 cases, internal opening couldn't be visualised. Six patients were documented to have a recurrence within 6 months of the procedure and in the rest were cured except in a small subset of patients who did not follow up.

CONCLUSIONS

Amongst the wide range of armamentarium available today for the treatment of complex anal fistulas, video assisted anal fistula treatment (VAAFT) is a novel sphincter saving technique. The recurrence rate at our centre was at par with other studies and with zero incontinence rate, however further RCTs are required.

KEYWORDS

Complex Anal Fistula, Fistula-in-Ano, MEINERO Fistuloscope, VAAFT

Corresponding Author:

*Dr. Anshu Atreya,
FNB (MAS) Trainee,
Calcutta Medical Research Institute,
Alipore, Kolkata – 700027,
West Bengal, India.
E-mail: anshu.atreya@gmail.com*

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BACKGROUND

Fistula-in-ano or the anal fistulas are chronic abnormal communications between perianal area and the rectum or the anal canal. It has been documented in medical literature since ancient times. Sushruta in his landmark text Sushruta Samhita way back in 6th century BC has documented the diagnosis and management of fistula-in-ano. Hippocrates in 4th Century BC described the treatment of fistula using horsehair.¹ In the 14th century, surgeon John of Arderne, who is considered as Father of English Surgery, in his work Practica of fistula-in-ano has described management of anal fistulas and which had been ascribed as one of the deadliest surgeries of medieval era. Later, in the 19th and early 20th centuries, renowned physician / surgeons, like Goodsall and Miles, Thompson, Milligan & Morgan and Lockhart-Mummery, offered theories on pathogenesis and classification systems for fistula in ano and contributed substantially in the treatment of anal fistulas.^{2,3}

Fistulas are ascribed to arise because of cryptoglandular infection with subsequent perirectal abscess. The abscess represents the acute inflammatory event, whereas the fistula epitomises the chronic process. Anal fistula patients commonly have a history of drained anal abscess in the past which usually is associated with fever, anorectal pain, swelling and cellulitis. Anorectal pain, drainage from the perianal region along with irritation of the perianal skin, and occasionally bleeding, can be the presenting symptoms of a fistula in ano. The pathology itself leads to a considerable worry and morbidity to the patient. Incidence of perianal fistulas in developed world, ranges between 0.86 and 2.32 per 10,000 population / year, with a male predominance and a reported male to female ratio varying between 2:1 to 5:1.⁴ ⁸ The peak in incidence of fistula is observed between 3rd and 5th decades of life. Treatment of fistula in ano has always been an arduous task for the surgeons considering the associated technical challenges in surgery due to its close relation with the faecal continence mechanism, infected operative field and results confounded by relatively high recurrence rates.⁹

The definite management of fistula in ano is always surgical though in the presence of acute perianal sepsis a definite surgical procedure other than incision and drainage cannot be taken up except if the track is superficial and obvious. Apart from the age old seton placement, invasive fistulotomy and fistulectomy procedures, the armamentarium for the management of fistula in ano now comprises of various least invasive surgical options like anal fistula plug,^{10,11} Ligation of Intersphincteric Fistula Tract (LIFT),¹² Video Assisted Anal Fistula Treatment (VAAFT)¹³, Fistula-tract Laser Closure (FiLaC)¹⁴ and the over-the-scope clip (OTSC) proctology procedure.¹⁵ Numerous new modalities like PERFECT (Proximal superficial cauterization, Emptying Regularly Fistula tracts And Curettage of Tracts),¹⁶ TROPIS (Transanal Opening of Intersphincteric Space),¹⁷ BioLIFT,¹⁸ and Adipose-derived stem cell treatment^{19,20} are being evaluated and added each year. The present study was undertaken to analyse the outcome of Video Assisted Anal Fistula Treatment in our subset of fistula patients.

METHODS

A retrospective, analytical study was performed at Calcutta Medical Research Institute to analyse the demographics, clinical profile, operative findings and outcome of VAAFT procedure in fistula-in-ano patients. All patients who underwent VAAFT between April 2013 and March 2019 by a single senior consultant surgeon performing routine endo laparoscopic procedures were included. The patient's hospital records which included peri-operative and 6 months follow up were studied carefully to obtain relevant clinical data. The attained data was further analysed using software Excel Microsoft 365.

In all patients undergoing VAAFT, during the preoperative period, they were clinically evaluated and apart from routine investigation, magnetic resonance imaging with Short Tau Inversion Recovery (STIR) sequences (Figure 1A) were mandatorily done in all cases. After obtaining informed consent and following preanaesthetic check, patients were posted for surgery. In the night prior and in the morning of the day of surgery, sodium phosphate enema was administered to the patient. Inside the operating room, a standard operating procedure as described in the scientific paper by P. MEINERO and L. Mori¹³ was adopted by the surgeon. The procedure described comprises of two phases: diagnostic and the operative phase.

In the diagnostic phase, the fistuloscope (Figure 1B) was inserted through external opening and advanced with horizontal and vertical hand movement to negotiate the tract. Mannitol and glycine infusion facilitate the fistuloscope movement by opening the tract further and in irrigating it. The internal opening is identified either through direct visualisation of anal / rectal mucosa or indirectly assessed by illumination from the emerging scope light. Sutures (2-0 polyglactin 910) are then placed, generally 2 to 3 in number, around the internal opening for further manipulation. In the operative phase, the unhealthy granulation lining of the fistulous tract is destroyed using monopolar cautery under direct vision and the necrotic material is removed using endo brush and forceps. The irrigations further help to clean the tract of all debris. The suture around the internal opening are pulled to lift the opening like the shape of a "volcano" and using gastrointestinal (GI) stapler loaded with 30 mm white cartridge, the internal opening is closed. Lastly 0.5 ml of cyanoacrylate glue is injected into the fistula tract using a small catheter, close to the stapler line to reinforce the suture and to completely seal the internal opening.

Following the procedure, regular dressing over the external opening along with light anal packing was done. In the postoperative period, the patients were administered with prophylactic intravenous antibiotics along with appropriate fluid resuscitation and analgesics. Oral feeding in the form of liquid was commenced after complete recovery from anaesthesia, generally 4 to 6 hours post-surgery, which was generally replaced with soft diet by the end of the day on the operative day. The dressing and the pack were removed on first postoperative day following which the patients were advised regular sitz bath.

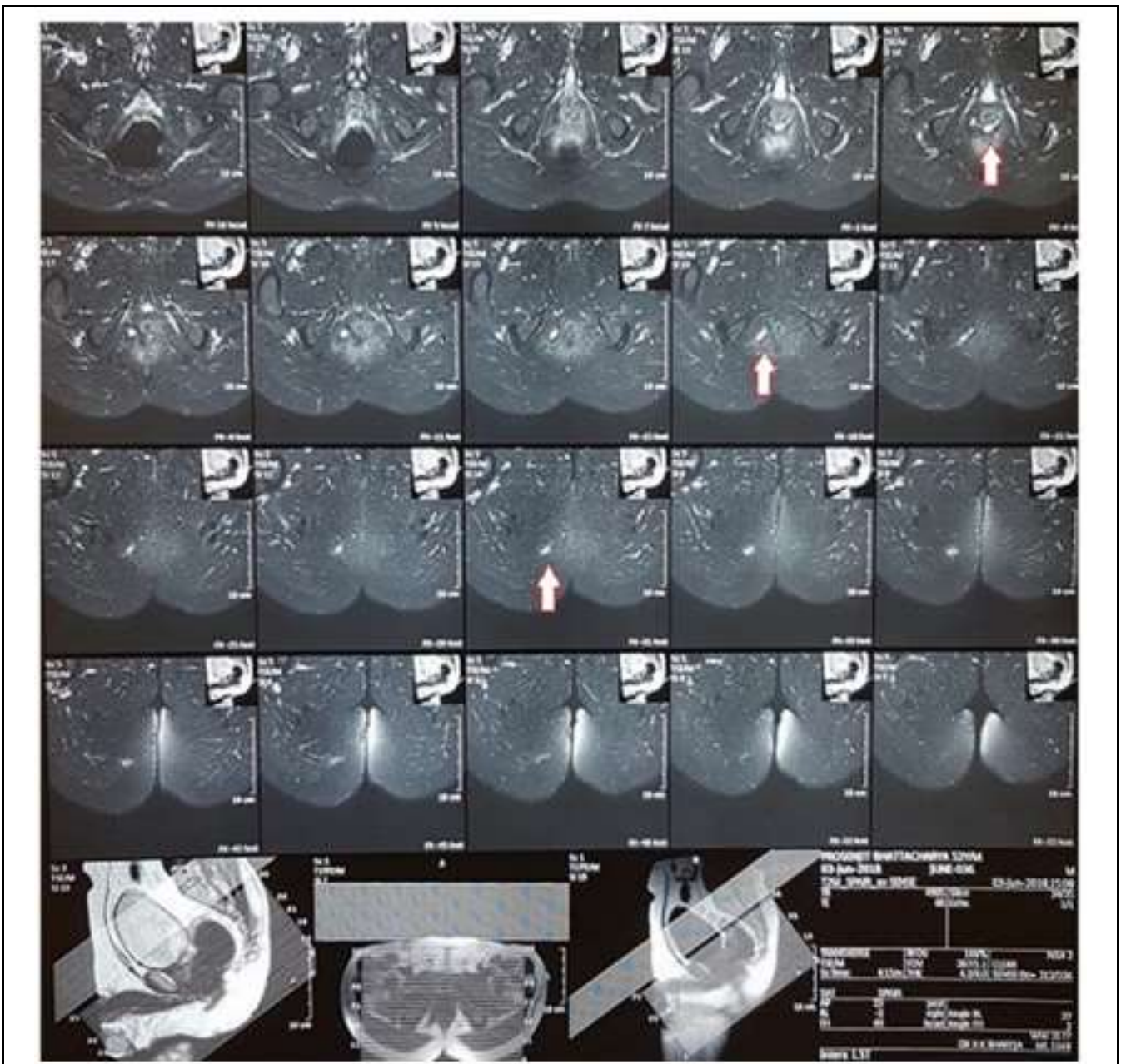


Figure 1 (A). Magnetic Resonance Image of Perineal Region (STIR Sequence). Arrows Showing the Fistula

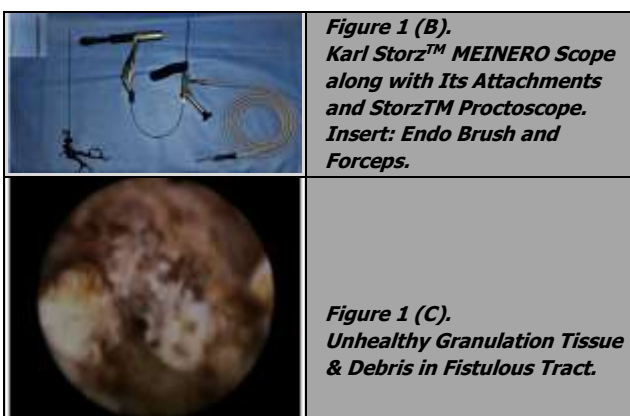


Figure 1 (B). Karl Storz™ MEINERO Scope along with Its Attachments and Storz™ Proctoscope. Insert: Endo Brush and Forceps.

Figure 1 (C). Unhealthy Granulation Tissue & Debris in Fistulous Tract.

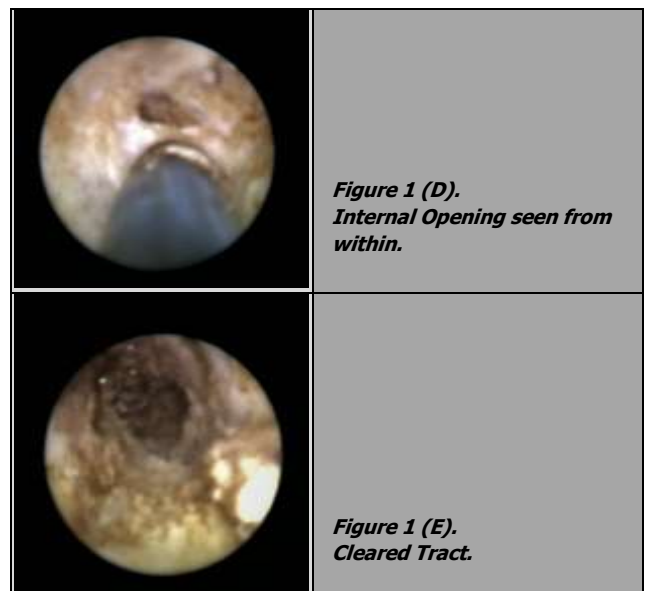


Figure 1 (D). Internal Opening seen from within.

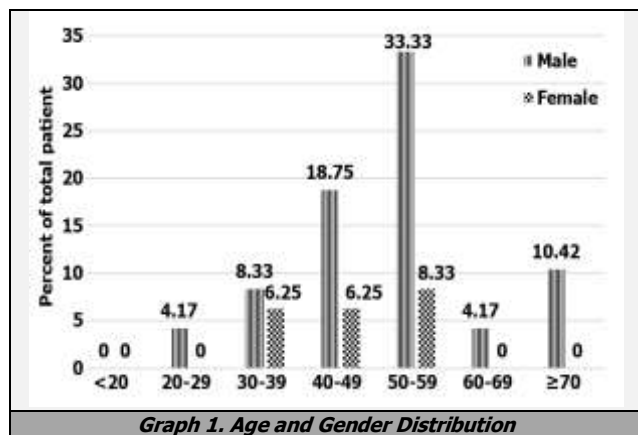
Figure 1 (E). Cleared Tract.

RESULTS

The patient database was retrospectively analysed and a total of 48 patients were found to have been operated with VAAFT, during the period between April 2013 and March 2019.

The age of the patient ranged between 21 and 77 years (mean 49.96 ± 12.22 year) with maximum patients (41.66 %) operated were in their 6th decade of life. Altogether 38 male (79.17 %) and 10 female (20.83 %) patients were part of the cohort.

The duration of presenting symptom ranged from 2 to 24 months with an average of 11.87 ± 4.62 months. Most common symptom was on and off discharge from external opening in 87.5 % patients, pain in 66.67 % and swelling in 41.67 % patients.



Graph 1. Age and Gender Distribution

Amongst the patients who underwent VAAFT, 19 (39.6 %) were found to have associated comorbidity in the form of diabetes mellitus and 15 (31.3 %) patients in the past had undergone perianal surgery for either perianal abscess or fistula (incision and drainage 11, previous fistula surgery 4).

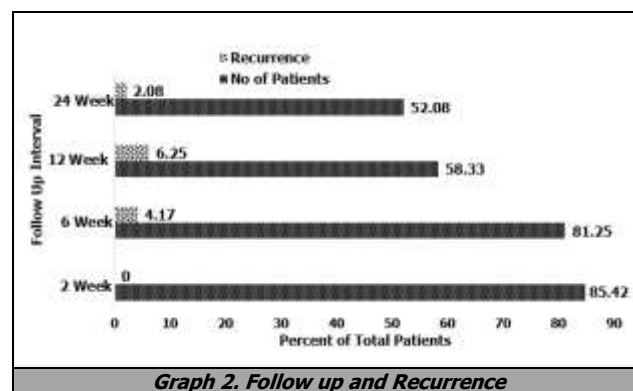
The mean operating time for our patients was 61 ± 8.20 minutes ranging from 40 minutes to 79 minutes.

Majority of patients (77.08 %) were discharged on 2nd and 3rd post-operative day, however, 11 patients (22.92 %) had prolonged stay beyond 3rd postoperative day (POD) of up to 8th POD. The mean post-operative hospital stay was found to be 3.02 ± 1.34 days.

4 patients (8.33 %) had complications in the early post-operative period in the form of fever, perianal sepsis and bleeding. A total of 43 (89.58 %) histopathological reports of excised external opening margins were available, 34 (70.83 %) of which were suggestive of chronic non-granulomatous inflammatory pathology, 2 (4.16 %) of Crohn’s disease and 7 (14.58 %) were suggestive of granulomatous lesion (tubercular).

	No. of Patients	
Type of Fistula (Revised Park’s Classification)	Superficial	0 (0 %)
	Intersphincteric	16 (33.3 %)
	Trans sphincteric	17 (35.42 %)
	Supra sphincteric	12 (25 %)
	Extra sphincteric	3 (6.25 %)
Tract	Single	29 (60.42 %)
	Branched / Multiple	19 (39.58 %)
Internal Opening	Identified	45 (93.75 %)
	Not identified	3 (6.25 %)
Level of Internal Opening	Anal canal	7 (14.58 %)
	Dentate line	22 (45.83 %)
	Rectum	16 (33.33 %)

Table 1. Fistula Profile (Determined by Preoperative MR Fistulogram & Intra-OP Finding)



Graph 2. Follow up and Recurrence

Analysis of available records reflected that 41 (85.42 %), 39 (81.25 %), 28 (58.33 %) and 25 (52.08 %) out of 48 operated patients showed up for follow up at and around 2, 6, 12 and 24 weeks respectively. Recurrence was detected in 2, 3 and 1 patient during follow up visit at around 6-, 12- and 24-weeks post-surgery respectively with total recurrence rate of 12.5 %.

Age / Sex	Duration of Symptoms	Diabetes	Previous Perianal Surgery	Fistula Profile			Early Post op Complication	Histopathology	Detection (Week)	Management of Recurrence
				Fistula Type	Tract	Internal Opening				
33 / M	7 Month	No	No	I	B / M	V	None	Chronic nonspecific	12	Fistulectomy
34 / F	11 Month	No	Yes	II	S	V	None	Crohn’s	12	VAAFT
41 / M	19 Month	Yes	No	I	B / M	NV	None	Tubercular	24	Referred
71 / M	11 Month	Yes	Yes	I	S	V	Perianal sepsis	Chronic nonspecific	6	Seton
38 / M	17 Month	Yes	Yes	I	B / M	V	Perianal sepsis	Chronic nonspecific	12	VAAFT
52 / M	12 Month	No	No	I	S	NV	None	Chronic nonspecific	6	Referred

Table 2. Patient with Recurrence

(Fistula Type: I: Trans sphincteric, II: Extra sphincteric, Tract: B / M: Branched / Multiple, S: Single Int Opening: V: Visualised, NV: Non-Visualised)

DISCUSSION

The ideal outcome of the surgical treatment of anal fistula must include eradication of sepsis, healing of the tract and at the same time preservation of the sphincters and the

continence mechanism. Higher success rate of up to 100 % can be achieved for simple and superficial fistulas by the conventional fistulotomy technique involving a complete transection of tissue between the fistula tract and skin. However, high fistulas with the tract traversing more than 30 % to 50 % of external sphincter and in recurrent and

complex fistulas, the hazard of damage to the continence mechanism remains in a large proportion of patients. The risk is also confounded in patients with pre-existing incontinence, previous obstetric injury, local irradiation or existing comorbidity in the form of Crohn's disease.^{21,22}

Video Assisted Anal Fistula Treatment developed by MEINERO and Mori¹³ in 2006, technically avoids sphincter dysfunction and simultaneously destroys and cleans the fistula tract from within and facilitates the detection and closure of the internal opening. Further under direct vision, proper anatomy of the fistula tract can be delineated and all branches of the fistula along with drainage of any small collection cavity can be achieved through VAAFT, which is limited in other novel procedures like FiLaC, LIFT etc. Various clinical trials and studies involving the sphincter saving procedures have been conducted and the efficacy of such procedure has been found to vary significantly. The expense aspect associated with certain procedures like anal fistula plug, FiLaC and adipose derived stem cell treatment must also be considered specially in a country like ours.

In the present retrospective study, promising and at par results of VAAFT procedure were observed. Amongst the patient who underwent VAAFT, a cure rate was achieved in 87.5 % of them which is at par with studies done by El-Barbary²³, FY Cheung²⁴ and P MEINERO¹³. The patients who developed recurrence following initial VAAFT, recovered well after the second VAAFT procedure done after an interval of 6 months, though at the cost of morbidity.

None of the patient had incontinence in the post-operative period though in terms of morbidity in initial period, 3 patients had fever ± cellulitis in peri anal region and purulent discharge from the tract, resulting due to infection in oedematous peri anal tissue caused due to leak of irrigation fluid. 1 patient had bleeding from the stapler site which was managed conservatively. There was no mortality in our cohort. Except for the initial cost of the MEINERO fistuloscope which could be reused for different patients after sterilization and the video system which is routinely available at any colo-rectal surgical unit or the minimal access surgery unit. There was no significant cost of any consumable used in the surgery, thus making it an affordable option for the treatment of complex anal fistulas.

CONCLUSIONS

Amongst the wide range of armamentarium available today for the treatment of complex anal fistulas, Video Assisted Anal Fistula Treatment (VAAFT), is a novel sphincter saving technique. The procedure except for the initial cost and learning curve has reproducible results at par with those of stalwarts who developed it. The recurrence rate at our centre was at par with other studies and with zero incontinence rate. However, further randomised control trials (RCTs) are required.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.

Financial or other competing interests: None.

Disclosure forms provided by the authors are available with the full text of this article at jebmh.com.

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